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AMSAT NEWS SERVICE
ANS-292

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to:
ans-editor at amsat.org.

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SB SAT @ AMSAT $ANS-292.01
ANS-292 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 292.01
>From AMSAT HQ KENSINGTON, MD.
DATE October 19, 2014
To All RADIO AMATEURS
BID: $ANS-292.01

ARISS-US Accepting Proposals To Host Scheduled ISS Contacts In 2015

You are encouraged to share the following "Message to US Educators" with teachers, administrators and leaders at your local schools, museums, science centers and scouting organizations.

Message to US Educators
Amateur Radio on the International Space Station
Contact Opportunity

Call for Proposals
Proposal Window October 17 - December 15, 2014

The Amateur Radio on the International Space Station (ARISS) Program is seeking formal and informal education institutions and organizations, individually or working together, to host an Amateur Radio contact with a crew member on board the ISS. ARISS anticipates that the contact would be held between May 1, 2015 and December 31,

2015. Crew scheduling and ISS orbits will determine the exact contact dates. To maximize these radio contact opportunities, ARISS is looking for organizations that will draw large numbers of participants and integrate the contact into a well-developed education plan.

THE DEADLINE TO SUMBIT A PROPOSAL IS DECEMBER 15, 2014.

The Opportunity
Crew members aboard the International Space Station will participate in scheduled Amateur Radio contacts. These radio contacts are approximately 10 minutes in length and allow students and educators to interact with the astronauts through a question-and-answer session.

An ARISS contact is a voice-only communication opportunity via Amateur Radio between astronauts and cosmonauts aboard the space station and classrooms and communities. ARISS contacts afford education audiences the opportunity to learn firsthand from astronauts what it is like to live and work in space and to learn about space research conducted on the ISS. Students also will have an opportunity to learn about satellite communication, wireless technology, and radio science. Because of the nature of human spaceflight and the complexity of scheduling activities aboard the ISS, organizations must demonstrate flexibility to accommodate changes in contact dates and times.

Amateur Radio organizations around the world, NASA, and space agencies in Russia, Canada, Japan and Europe sponsor this educational opportunity by providing the equipment and operational support to enable direct communication between crew on the ISS and students around the world via Amateur Radio. In the US, the program is managed by AMSAT (Radio Amateur Satellite Corporation) and ARRL (American Radio Relay League) in partnership with NASA.

More Information
Interested parties can find more information about the program at www.ariss.org and www.arrl.org/ARISS. More details on expectations, audience, proposal guidelines and proposal form, and dates and times of Information Sessions are available at www.arrl.org/hosting-an-ariss-contact.

Please direct any questions to ariss at arrl dot org.

Design the Next AMSAT Satellite!

At the 2014 AMSAT Space Symposium AMSAT Vice President - Engineering Jerry Buxton announced the plan for the next generation of AMSAT satellites. "The door is open for everyone, to submit their ideas. AMSAT Engineering has a long term strategy and this is the first step."

The Engineering long term strategy includes the following goals

* Advancement of amateur radio satellite technical and communications skills
* Enhance international goodwill
* Grow and sustain a skilled pool of amateur radio satellite engineers
* Establish and maintain partnerships with educational institutions
* Develop a means to use hardware common to all opportunities

With respect to the last goal Jerry said "Within the bounds of the type of satellite it takes to achieve any of the various orbit opportunities, let's consider in those plans the possibility of developing a platform that can suit any and all orbits. Perhaps a modular CubeSat, using a common bus as we did in Fox-1, which gives great flexibility in building and flying different sizes and configurations of CubeSats with simple common-design hardware changes."

Submissions should be thorough and contain the following information. The purpose of the proposal is not just in suggesting an idea; being an all-volunteer team AMSAT needs your help in carrying out the idea.

* Design
* Implementation - CubeSat platform
* Estimated timeline
* Cost - volunteer resources, commercial (COTS) units
* Launch - how does it get to orbit
* Strategy - how it fits into AMSAT's Engineering long term strategy

As mentioned above the idea should be based on the CubeSat platform. This is the standard through which we will look for launches in the foreseeable future.

In considering your proposal, Jerry encourages you to contact him for more details on the criteria. In particular, if you plan to include a university as a partner to provide experiments or other support and you are not representing that university, please contact Jerry for assistance in working with our existing partners or establishing a new partnership.

"Being amateur radio operators, it is easy for us to fall into a particular trap because of our history of communicating with other amateurs throughout the world" says Jerry. "Specifically, most people who are not already involved in the world of satellite technology are unaware of or simply overlook the provisions of the current ITAR and soon to be EAR export rules particularly with regard to deemed exports which requires governmental permission to discuss satellite projects with foreign nationals."

While all amateurs are invited to submit ideas, U.S. amateurs must take particular care of they choose to become involved in a collaboration which includes individuals from other countries. It is permissible to receive ideas and proposals from outside the U.S., but it is not permitted for U.S. Persons to export or share design ideas with other countries unless they have taken the proper steps to insure compliance with ITAR and deemed export rules.

Additionally, those wishing to work on proposals should use care in presenting themselves in their contacts. While the goal is for AMSAT to build and launch the satellite, it is not an AMSAT project until it is accepted by the AMSAT Board of Directors. It is acceptable to represent yourself as members of a project team that plans to submit a proposal to AMSAT for a future satellite project, as the AMSAT name is well known.

"It is not our intention that ideas be submitted to AMSAT-NA which would be more appropriately handled by an AMSAT organization in a country where AMSAT is established. AMSAT-NA is seeking ideas from amateurs in North America and will certainly consider ideas from amateurs in countries which do not have an established AMSAT organization or relationships with an existing AMSAT organization."

The deadline for submissions is May 30, 2015. After the submission date the ideas will be screened for completeness and then reviewed by a board consisting of the AMSAT Engineering Team, AMSAT Senior Officer and Board of Directors representatives, and aerospace industry members. The review board may modify or consolidate ideas and will consider which meet the criteria to become a project based on feasibility, cost, and the ability to bring value to the amateur satellite community. The review process is expected to be completed in September 2015.

For those ideas selected to become a project which satisfy the requirements for an ELaNa launch, the idea authors will be asked to work with the AMSAT Engineering Team on an ELaNa proposal.
The Engineering Team will then work on the details of execution for the selected project(s) and present a proposal to the AMSAT Board of Directors in October 2015 for final approval to begin work. Once approved, any ELaNa proposals will be submitted in November 2015 and the project(s) will move forward.

Now is the time for YOU to begin working on the next AMSAT satellite!

[ANS thanks AMSAT-NA for the above information]

Russian 'Smart' Mini-Satellites to Go Into Orbit in 2016

The first group of Russian "smart" mini-satellites should be launched into orbit in 2016, Mikhail Sonkin, the Deputy Governor of Russia's Tomsk Region, said Wednesday.

"The signing of an agreement on the creation of an association to carry out projects in the sphere of the development of groups of miniature satellites is in progress...The launch [of the satellites] is planned for 2016," Sonkin, who is responsible for the scientific and educational complex and innovation policy in the region, said at the Open Innovations Forum in Moscow.

A number of Russian universities and space industry companies are expected to join the association, which will work on creating software to control groups of mini-satellites and improve their interaction with each other.

According to Sonkin, members of the association, which will include Tomsk Polytechnic University (TPU) and Tomsk State University (TSU), will also be working on developing new materials for the space industry and on establishing communication networks in remote areas.

Last month, Chairman of the Presidium of the Tomsk Scientific Center of the Siberian Division of the Russian Academy of Sciences Sergey Psakhie announced that Russian scientists were planning to create unique mini-satellites capable of group interaction.

The satellites, similar to CubeSat developed in the United States, would be able to self-educate and repair each other without leaving the Earth's orbit.

Source: RIA Novosti

[ANS thanks SpaceDaily.com for the above information]

UKSA announces CubeSat payload opportunity

The UK Space Agency (UKSA) has announced an opportunity to fly payloads on the 3U CubeSat AlSat-1N.

AlSat-Nano is primarily an education programme, its top level objective is to teach Algerian students how to design, build and operate a 3U CubeSat. The programme involves a number of Algerian graduate students who will be hosted at the Surrey Space Centre (University of Surrey) and focuses on the development of the CubeSat as a hands-on learning exercise for the students, to demonstrate the practical implementation of this type of low cost space technology.

As well as the practical element of the programme there will be a focus on research modules around the use of low cost nano-satellite technologies and applications in developing nations such as Algeria, which would help to create sustainable growth and have practical uses such as earthresource management (agriculture, water), atmospheric monitoring, and disaster management.

The design and build of the nano-satellite will take place at Surrey Space Centre. Final assembly, integration and verification will take place at the ASAL satellite development facility in Oran, Algeria. Operations will be carried out from Oran also.

The bus will be built using hardware sourced from UK suppliers and the CubeSat will also carry payloads which will be supplied by the UK CubeSat community. These payloads will be selected in a competitive process following an Announcement of Flight Opportunity which will be issued in December 2014.

The precise interface specifications will be developed during the first trimester of the project to be integrated in the Announcement of Opportunity, however it is foreseen that a maximum volume of 1U (10cm x 10cm x 10cm) and maximum mass of 1kg will be available for payloads. The selection of the payloads will be carried out in early 2015 via a selection panel.

Payloads must be ready for functional testing and integration by September 2015. Launch will be in Q2 2016. Because of the educational and collaborative nature of the programme there are two further specific points that should be noted:
* Payload providers must be actively engaged in all programme reviews and an active participant in the consortium
* Payload providers must be willing to share payload data with the programme for research purposes, and to receive interpreted payload data via the ASAL ground segment in Oran, Algeria

Submissions should be sent to Ryan King, UK Space Agency - ryan.king(a)ukspaceagency.bis.gsi.gov.uk with 'AlSat-Nano RFI' as the subject line. The deadline for responses is 12 noon, November 14th 2014. Submissions received after this time will not be read.

RFI PDF http://tinyurl.com/ANS292-AlSat-Nano-Info

UK Space Agency Announcement
http://tinyurl.com/ANS292-alsat-nano-payload

[ANS thanks AMSAT-UK for the above information]

4M (Manfred Memorial Moon Mission)

4M or Manfred Memorial Moon Mission is a mission dedicated to LuxSpace founder, Prof. Manfred Fuchs, who died early this year. The mission is a lunar flyby of a spacecraft that is attached to the last stage of a Chinese Long March 3C rocket. The launch is scheduled for October 23, 2014 at 1800 UTC.

Beijing plans to launch a Lunar spacecraft on a journey lasting 196 hours that should take it around the Moon before returning and re-entering the Earth's atmosphere. It will carry a 14 kg payload known as 4M-LXS which was developed at LuxSpace.

The 4M-LXS amateur radio payload will transmit on 145.980 MHz +/- 2.9kHz (-40°C to +125°C), Doppler max: -2200Hz, +1000Hz. The continuous transmissions will start 4670s (77.8 minutes) after launch (-0, +600s). Five successive 1 minute sequences are sent during the 5 minutes cycle. The digital mode JT65B will be used, this can be decoded by radio amateurs using the free WJST software, there will also be 'human readable' tone transmissions. See the transmit sequence description on page 14 of 4M Mission: a Lunar FlyBy experiment available at https://ukamsat.files.wordpress.com/2014/09/lxs-4m-eme2014-a4-v3.pdf

During the lunar flyby, the range will be 399,636 km at the most and the distance to the Moon will be between 12,000 and 24,000 km depending on the final injection vector. The transmitter produces 1.5 watts to a simple Monopole antenna which should give a Signal to Noise ratio (S/N) comparable to amateur moon bounce (EME) signals at the Earth's surface.

LuxSpace encourages radio amateurs around the world to receive the transmissions and send in data. There will be a number of Experiments and Contests with prizes to the winners in each experiment and category. Details are given on page 19 of 4M Mission: a Lunar FlyBy experiment.

A Java client will be made available to automatically send the WSJT ALL.TXT and the decoded.txt files to a central database.

The orbiter is one of the test models for Beijing's new lunar probe Chang'e-5, which will be tasked with landing on the moon, collecting samples and returning to Earth. The launch is aimed at testing the technologies that are vital for the success of Chang'e-5. The orbiter will be launched into Lunar Transfer Orbit (LTO) then will perform a flyby around the Moon and re-enter the Earth's atmosphere after 196 hours (9 days).

The orbiter arrived by air in Xichang, Sichuan on Sunday, August 10 and was then transported to the Xichang Satellite Launch Center.

The integration of the LX0OHB-4M amateur radio payload was completed on Sunday night, October 12 and is now ready to launch

The onboard clock has been adjusted to start JT65B (145.980 MHz) at the UTC minute +/-1 second. It is likely to drift during the mission, and manual offset introduction will be required after a week or so. The launch date is October 23 at 1800 UTC.

Beginning of transmission of 4M will start between 1917 UTC and 1927

UTC. Refer to the provided maps and animations links in the blog section (see also older messages) to determine your visibility. Alternatively, use the 'tracking' section where you can compute your tracking elements by introducing your geographic coordinates. The table can be copied/pasted into a text file. As the apparent movement will be close (and closer) to the one one of the Moon, manual pointing is easy but for the largest arrays.

The link budget is quite tight, but the first hours should give comfortable signals. QSB is to be expected.

As JT65B is used: please remind those not yet too familiar with it that the receiver must not be tuned during the transmission. A dedicated webpage is being written to detail the procedure.

A dedicated java application is also available to automatically transmit the decoded messages to the 4M website and ease the data collection. (Thanks to LSE Space). Alternatively, you can also send the decoded messages by eMail, sending the ALL.txt file.

For those not wishing to use JT65B, please record the signals (11025s/s, 8or 16 bits, mono), taking care not to saturate the recording and NO MP3 please.

SpectrumLab is an excellent choice, although some may wish to use simpler recording software.

You can imagine that the team is quite eager to receive the first reports, so, do not hesitate to mail immediately, send decoded messages or even phone or text me at +352 661 678 986.

Our friends of IC CMalaga are also quite eager to receive the results of their radiation dosimeter experiment.

Basic rules of the contest have been delineated in the blog section. Complete rules will be published soon.

Stay tuned on our website or Facebook page.

The following is a tentative set of orbital elements that should remain valid from the launch to at least up to the October 27 when using usual classical and simple tracking software which does not integrate Moon.

```
1 99999U          14298.79728009  .00000066  00000-0  00000-0 0 00006
2 99999 030.6553 295.6956 9746689 147.2577 071.9585 00.10600338000010
```

The following set is to be used after the flyby from October 28 onwards

```
1 99999U          14301.79728009  .00000000   00000-0 00000-0 0 00009
2 99999 049.9434 067.2017 6639865 045.9865 124.5019 00.06612018000010
```

Details on receiving signals from the Manfred Memorial Moon Mission (4M) can be found at
http://moon.luxspace.lu/receiving-4m/

Ghislain Ruy LX2RG
Email ruy(a)luxspace.lu with "4M Amateur" in the subject

Manfred Memorial Moon Mission (4M) http://moon.luxspace.lu/
Facebook https://www.facebook.com/LuxSpaceSarl

The launch will be broadcast by CNTV/CCTV:

http://www.cntv.cn/ or
http://english.cntv.cn/ or
http://english.cntv.cn/live/p2p/index.shtml

Information animations and some JT65B test files at
http://tinyurl.com/ANS292-Animations

AMSAT-UK http://amsat-uk.org/
Facebook https://www.facebook.com/amsatuk
Twitter https://twitter.com/AMSAT_UK

[ANS thanks LuxSpace.lu, AMSAT-UK and Southgate ARN for the above information]

Space Shuttle Thermal Protective Tiles Available for Educational Use

NASA invites eligible U.S. educational institutions and museums to request space shuttle thermal protective tiles and other special items offered on a first-come, first-served basis while quantities last. Organizations previously allocated thermal protective tiles may request an additional three tiles.

There will be a nominal shipping fee that must be paid online with a credit card. To make a request for special items online, visit http://tinyurl.com/ANS292-ShuttleTiles.

Questions about this opportunity should be directed to GSAXcessHelp(a)gsa.gov.

[ANS thanks NASA Education Express Message -- Oct. 16, 2014 for the above information]

HamTV Bulletin #15

Ham Video reception with low gain antenna.

Tonino Giagnacovo IZ8YRR did an experiment with a low gain antenna during the Ham Video commissioning.

Tonino wrote an article about this experiment, which was published in Radio Rivista, the magazine of ARI, Associazione Radioamatori Italiani, the Italian IARU society.

Tonino translated his article in English. It is now available on the ARISS-Europe website:
www.ariss-eu.org

Please see left column.

Thanks to Tonino for making his article available in English.

73, Gaston Bertels - ON4WF
ARISS-Europe chairman

[ANS thanks Gaston ON4WF for the above information]

ARISS News

ARISS-US is Accepting Proposals To Host Scheduled ISS Contacts In 2015
See lead story above or visit
http://www.arrl.org/hosting-an-ariss-contact

+ A Successful contact was made between Team Sky and Rocket (NPO Sora-To-Rocket-Dan), Aichi, Japan and Astronaut Gregory Wiseman KF5LKT using callsign NA1SS. The contact began 2014-10-09 09:00 UTC and lasted about nine and a half minutes. Contact was direct via 8J2YSM.
ARISS Mentor was 7M3TJZ.

+ A Successful contact was made between Pilton Bluecoat School, Barnstaple, United Kingdom and Astronaut Gregory Wiseman KF5LKT using callsign NA1SS. The contact began 2014-10-08 10:08 UTC and lasted about nine and a half minutes. Contact was telebridged via W6SRJ.
ARISS Mentor was MØXTD.

+ A Successful contact was made between Indiana Area School District, Indiana, PA, USA and Astronaut Alexander Gerst KF5ONO using callsign NA1SS/IRØISS. The contact began 2014-10-17 16:41 UTC and lasted about nine and a half minutes. Contact was telebridged via IK1SLD.
ARISS Mentor was AJ9N.

Upcoming ARISS Contact Schedule

>From 2014-11-10 to 2014-12-07, there will be no US Operational Segment (USOS) hams on board ISS. So any schools contacts during this period will be conducted by the ARISS Russia team.

Total number of ARISS ISS to earth school events is 931.
Each school counts as 1 event.
Total number of ARISS ISS to earth school contacts is 909.
Each contact may have multiple schools sharing the same time slot.
Total number of ARISS supported terrestrial contacts is 46.

A complete year by year breakdown of the contacts may be found in the file.
http://www.amsat.org/amsat/ariss/news/arissnews.rtf

QSL information may be found at:
http://www.ariss.org/qsl-cards.html

ISS callsigns: DPØISS, NA1SS, OR4ISS, RSØISS

The successful school list has been updated as of 2014-10-10 06:30 UTC.

http://www.amsat.org/amsat/ariss/news/Successful_ARISS_schools.rtf

Check out the Zoho reports of the ARISS contacts
https://reports.zoho.com/ZDBDataSheetView.cc?DBID=412218000000020415

Exp. 40/41 on orbit
Maxim Suraev
Gregory Wiseman KF5LKT
Alexander Gerst KF5ONO

Exp. 41/42 on orbit
Barry Wilmore
Alexander Samokutyayev
Elena Serova

[ANS thanks ARISS, Charlie AJ9N and David AA4KN for the above information]

Satellite Shorts From All Over

+ Yes, it is rocket science... a nasty place to ride...

Bob Bruninga WB4APR offers the following link of interest.

To see the violence that a cubesat has to go through, here is a test we did today on a power supply board.

http://aprs.org/psat/Vibe-coil-test1724.MOV   (1 meg file)

It failed even before we got to the 22G requirement!

[ANS thanks Bob WB4APR for the above information]

+ Why radio hams should consider 3D printing

Mike Grauer, Jr, KE7DBX, asks radio amateurs to think about how 3D printers can be used in home construction

He says:

As a member of the ham radio community, I have always been fascinated by the maker mindset which has existed since the early days of radio. From making radio equipment from scratch, to kits and even modifying commercially available equipment, the maker movement and radio go hand in hand.

The 3D printing community shares many traits with the ham radio movement. At the heart of it all is making, creating and inventing. And just like ham radio operators, those involved with 3D printing are constantly learning new technical skills that can be used in other areas of our lives.

Read the full story at
http://www.inside3dp.com/ham-operators-consider-3d-printing/

[ANS thanks Southgate ARN for the above information]

+ New Website For Indian Amateur Satellite Organization

Posted by our UK friends on Southgate ...

The Indian amateur satellite organisation have launched a new website

The site describes two projects which AMSAT-India is currently working on, a 435/145 MHz linear transponder and a 435 MHz CubeSat communication sub system.

Some back issues of the AMSAT-India newsletter are available for download.

Web http://amsatindia.org/

/EX

In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office.

Primary and secondary school students are eligible for membership at one-half the standard yearly rate. Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status. Contact Martha at the AMSAT Office for additional student membership information.

73,
This week's ANS Editor,
EMike McCardel, KC8YLD
kc8yld at amsat dot org